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## WASTEWATER CHARACTERIZATION SURVEY SHAW AIR FORCE BASE, SOUTH CAROLINA

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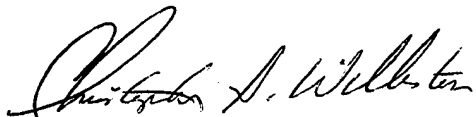
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13. ABSTRACT ( <i>Maximum 200 words</i> ) Personnel from the Armstrong Laboratory Water Quality Branch conducted a wastewater characterization survey for the Bioenvironmental Engineering Shop at Shaw AFB, South Carolina, from 24-31 August 1994. The scope of this survey was to sample wastewater throughout the base to determine if significant pollutant concentrations exist in the wastewater discharge. This baseline survey was also necessary for the renewal of the NPDES permit required by South Carolina. The survey revealed that the treatment level at the wastewater treatment plant meets the current standards. It also indicated that there are areas where volatile organics are discharged to the sanitary in minor levels that can be reduced. This survey also identified some oil/water separators that require heavy maintenance to become operational again, in addition to some pollution prevention issues.  Cooling water discharged to the sanitary accounts for a good proportion of the flow that is costing the base \$100K's in annual treatment costs. These systems may be remodeled, and future colling systems respecified to conserve water resources.				
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During this wastewater characterization survey we trained available Bioenvironmental staff on the site selection and operation and maintenance of electronic composite samplers. I would like to thank Lt Dave Hunt for his participation and support of this effort. In addition I would like to thank the staff at the wastewater laboratory for their patience of us taking over their facility.

Additional thanks goes to TSgt Doris Hemenway for her assistance in chasing down analytical results and the compilation into neat data tables.

# WASTEWATER CHARACTERIZATION SURVEY

## Shaw Air Force Base, South Carolina

### INTRODUCTION

A wastewater characterization survey was conducted at Shaw Air Force Base (SAFB), South Carolina from 24-31 August 94 by personnel from the Armstrong Laboratory, Water Quality Branch. The main purposes of this survey were to establish a baseline influent to and effluent from the treatment plant operating on base. In addition characterize the wastewater on a base level at strategic sanitary points, determine the impact of present waste sewer disposal practices, and evaluate if the treatment plant is meeting the current National Pollution Discharge Elimination System (NPDES) permit levels.

The wastewater characterization survey was requested by Lt Col David L. Potts of HQ ACC/SGB. Copies of the request letter and response letters are at Appendix A. A proposed sampling plan, (See Appendix B) was created based on facility layouts provided by the base.

Armstrong Laboratory personnel performing the survey included Capt Christopher A. Williston, MSgt Terry Boyd and SSgt Robert P. Davis.

### DISCUSSION

#### Background

Shaw Air Force Base is located West of Sumter and East of Columbia SC on Highway 76. It is the home of Headquarters for both Ninth Air Force (USCENTAF), and 20th Fighter Wing, and a host of associate unit organizations. Currently there are no Reserve or Guard operations stationed at Shaw AFB.

The vast majority of the sanitary system is located west of the flightline. There are a few minor operations conducted on the north west side of the flight line, however, they are connected to separate septic leach fields.

The Waste Water Treatment Facility (WWTF) is located on the far west side of the base. The WWTF outfall is pumped several miles to Beach Creek. The Oil/water separators located on the base discharge into the sanitary except for the North and South Ditch which are permitted by the State. These two ditches were dry during our survey and were not sampled due to no rain events.



### Wastewater Sources

There are five sewage pump or lift stations that convey domestic and commercial sewage to the WWTF. The two housing areas are located away from the commercial areas. Aircraft maintenance activities are conducted primarily along the flightline. Most of these facilities appeared to discharge mostly domestic wastes at low flow rates. There are a couple of high, periodic flow washracks activities that commingled with these wastestreams.

### Wastewater Permit Standards

*Domestic* (also called *sanitary*) *wastewater*, is defined by Metcalf & Eddy as, "Wastewater discharged from residences and from commercial, institutional, and similar facilities". *Industrial wastewater* is defined as, "Wastewater in which industrial wastes predominate". The National Pollution Discharge Elimination System (NPDES) Permit #SC0024970 for Shaw Air Force Base is classified as a sanitary wastewater. This permit outlines monitoring requirements and discharge limitations for the base effluent. These limits are listed in Appendix D.

### Sampling Strategy

A presurvey was conducted from 1-7 July 1994 by Capt Williston of AL/OEBW. Sampling sites were selected and inspected at this visit in cooperation with the Bioenvironmental Engineering shop. The sample sites are widely dispersed throughout the base. The sites were selected based on potential sources of contaminants, sewage branch lines draining off key industrial areas, and flow. These sites were inspected during the presurvey to insure accessibility and sufficient flow rates. A copy of the sampling strategy is at Appendix B. A map showing the locations of the wastewater sampling sites is in Appendix C.

A description of the 11 sampling sites follows:

Site 1; Base WWTF Effluent, Located on the west side of the base. This is the sampling point where the base personnel conduct their monitoring program. 24-hour composite samples were collected over seven days. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics for 7-days), EPA Methods 624 & 625 (Total Toxic Organic Compounds for 1-day), EPA Method 608 (Pesticides and PCB's for 1-day), Ammonia, TKN, Nitrate, Nitrite as Nitrogen, Oils and Greases (O&G), Total Petroleum Hydrocarbons (TPH), Total Metals, COD, Total Phosphorus, Arsenic, Cyanide, Phenols, Total Solids, On-site Water Temperature and pH.

Site 2; Base WWTF Influent, located after the grit chamber at the treatment facility. Samples were collected over seven days. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics for 7-days), EPA Methods 624 & 625 (Total Toxic Organic Compounds for 1-day), EPA Method 608 (Pesticides and PCB's for 1-day), Ammonia, TKN, Nitrate, Nitrite as Nitrogen, Oils and Greases

(O&G), Total Petroleum Hydrocarbons (TPH), Total Metals, COD, Total Phosphorus, Arsenic, Cyanide, Phenols, Total Solids, On-site Water Temperature and pH.

Site 3; 20th Transportation Vehicle Maintenance, Building 325 and the washrack effluent located at Manhole 162. Samples were collected over three days. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, TPH, Total Metals, COD, Total Phosphorus, Arsenic, Cyanide, Phenols, Total Solids, On-site Water Temperature and pH.

Site 4; Hospital Effluent, The collection point is at manhole 85B located on the southeast corner of the hospital. This site was sandbagged to separate sanitary coming from some administration buildings located further west of the hospital. Samples were collected over three days. Analyses at this location included: Ammonia, EPA methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, Total Petroleum Hydrocarbons (TPH), Total Metals, COD, Total Phosphorus, Arsenic, Cyanide, Phenols, Total Solids, On-site Water Temperature and pH.

Site 5; Dental Clinic Effluent, The sample site is in Manhole 87. Samples were collected over three days. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, TPH, Total Metals, COD, Total Phosphorus, Arsenic, Cyanide, Phenols, Total Solids, On-site Water Temperature and pH.

Site 6; Precision Measuring Electronics Laboratory (PMEL), Building 826 effluent. The sampling location is manhole 62. Samples were collected over two days. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, TPH, Total Metals, COD, Total Phosphorus, Arsenic, Cyanide, Phenols, Total Solids, On-site Water Temperature and pH.

Site 7; Phase Maintenance Hanger 1200 effluent. The collection point is at the lift station 1216. Samples were collected over four days. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, Total Petroleum Hydrocarbons (TPH), Total Metals, COD, Phenols, Total Solids, On-site Water Temperature and pH.

Site 8; Building 1118 effluent. The location of this site is at the manhole located northwest of the building in the parking lot. Samples were collected over four days. The major concern at this location is the silver from photo processing. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics, O&G, Total Petroleum Hydrocarbons (TPH), Total Phosphorus, Arsenic, Cyanide, Phenols, On-site Water Temperature and pH.

Site 9; Base Housing effluent. Sample were collected at an unlabeled manhole located on the golf course. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics), EPA method 608 (PCB's and pesticides), O&G,

Total Petroleum Hydrocarbons (TPH), Total Metals, COD, Total Phosphorus, Arsenic, Cyanide, Phenols, Total Solids, Onsite Water Temperature and pH.

Site 10; Aircraft AGE Maintenance, at Lift Station #1600. Buildings located northeast of 1501 all collect to this location. Samples were collected over three days. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, Total Petroleum Hydrocarbons (TPH), Total Metals, COD, Total Phosphorus, Arsenic, Cyanide, Phenols, Total Solids, On-site Water Temperature and pH.

Site 11; South CE Complex. Samples were collected at Manhole 155C. Samples were collected over three days. Analyses at this location included: EPA methods 601/602 (Purgeable Halocarbons and Aromatics), EPA method 608 (PCB's and pesticides), O&G, Total Petroleum Hydrocarbons (TPH), Total Metals, COD, Total Phosphorus, Arsenic, Cyanide, Phenols, Total Solids, On-site Water Temperature and pH.

Potable Drinking Water from the Security Police Guard Shack at Rhodes Gate; A sample of potable water was collected from the base drinking water supply. This sample was collected to identify possible source elements that in turn add to the effluent concentration. This site also had some past complaints on the water quality. Analysis at this source included: EPA Methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, TPH, total metals, ammonia, COD, cyanide, phenols, nitrate, nitrite, kjeldahl nitrogen, total acidity, total alkalinity, temperature, total phosphorus, and pH.

#### Sampling Methods

Wastewater samples were typically collected over a 24-hour period as a time-proportional composite. Ice was added in sufficient quantity to the sampler's base insuring the wastewater being composited in the 2.5-gallon (10-liter) jar was maintained at <4°C. At the end of the compositing period, each water sample was stirred to mix the solids thoroughly and the contents poured directly from the jar into appropriate prelabeled sample containers and placed in a cooler filled with ice. The collection jar was replaced with a clean jar prior to each sampling interval. After all the samples were collected for each time period, they were transported in coolers to the temporary work center (located at the WWTF Laboratory), where appropriate preservatives were placed in each bottle. The samples were then placed in a refrigerator. They were placed in insulated shipping coolers, packed with blue ice, transported to TMO and were requested to be shipped overnight to Armstrong Analytical Laboratory and their contract laboratory. TMO did not follow our instructions and so most of the samples were allowed to elevate in temperature, therefore some of the volatile organic compounds in EPA methods 601/602 may have been more elevated than indicated in the data tables.

Samples collected for volatile organic halocarbons and aromatics, oils and greases, total petroleum hydrocarbons, total solids or residues and the volatile fraction of total toxic organics were collected as grab samples. These samples were captured

directly from the wastestream and then poured directly into the appropriate sample container. The samples were preserved and shipped in the same conditions as the previously mentioned samples.

The water sample pH and temperature were taken from each site's wastestream and recorded daily along with pertinent information relevant to the sample integrity (rain, odor, color, sampler condition, etc.).

All samples were collected and analyzed using Environmental Protection Agency (EPA) approved procedures. Sample preservation was in accordance with the AFOEHL Sampling Guide, March 1994.

#### Field Quality Assurance/Quality Control (QA/QC)

A field QA/QC program was used during this survey to verify the accuracy and reproducibility of laboratory results. The following types of samples were collected:

Equipment Blank Samples: Equipment blank samples were collected by pumping a liter of Laboratory Grade distilled water through the pump/purge cycle of the sampler into the appropriate sample container. Preservation and shipping was conducted in the same manner as the routine samples. These samples are used to check for cross contamination from the sampler, which may leach contaminants into the sample through residuals or desorption from the sampler tubing.

Reagent Blank Samples: Reagent blank samples are made by adding a standard aliquot of reagent preservative to a standard sample volume of Laboratory Grade distilled water. These samples are analyzed for analytical parameters that were collected in the field. These samples serve to verify that the reagent does not add quantitative value to the analyte from its own matrix.

Duplicate Samples: Duplicate samples are collected by splitting grab or composite samples with a sample splitter under identical protocol. Sample collection is accomplished by splitting the samples in the 2.5-gallon (10-liter) jar or grabbing double samples of each analyte. Each group of two samples is managed the same regarding collection, handling, preservation, storage, and shipment. This series monitors the reproducibility of sample analytical results. It should be noted that even with the use of a sample splitter, replicating duplicate sample results is difficult because changes in flow and unequal capture of solids can contribute to variability between the original and the duplicate sample.

#### Analytical Laboratory QA/QC

The Armstrong Laboratory Analytical Division Quality Assurance Plan establishes the guidelines and rules necessary to meet the analytical requirements of 43 states, US EPA, and private accrediting agencies. Specific activities include: (a)

inserting a minimum of one blind sample control for each parameter analyzed on a monthly basis, (b) periodic audit of the quality assurance items from each branch, (c) daily calibration of equipment, (d) a minimum of one National Institute Standards and Technology/Standard Reference Materials (NITS/SRM) traceable standard and control sample that is included with each analytical run, (e) corrective action documented each time a quality assurance is not met, (f) established detection limits for all sample data, (g) participation by the laboratory in numerous proficiency surveys and interlaboratory quality evaluation programs, and (h) plotting and tracking all quality control samples by the appropriate analytical section.

Quality assurance, also mandatory for all contracted analytical services, is validated periodically by Armstrong Laboratory personnel.

Spike Samples: Spike samples were prepared by Armstrong Laboratory's Analytical Services Division. These samples were prepared by filling the appropriate sample container with laboratory grade distilled water, adding a known quantity of an analytical parameter, and preserving the sample as appropriate. This series monitors the sample collection, preservation, and reproducibility of analytical results. Spike samples were split at the lab, brought to SAFB and shipped to the contract lab to evaluate sample integrity and duplication.

## RESULTS AND CONCLUSIONS FOR WASTEWATER CHARACTERIZATION

Contaminant concentrations and physical and chemical parameters are presented in the following section to characterize the various wastewater streams sampled during the survey. Some of the concentrations show potential problems with disposal methods. Others simply contribute to the identifying characteristics of the wastewater that reflect the types of materials being discharged into the sewers. Please note that all analytical results by site number may be found in Appendix D.

The results are segregated into tables as follows:

### Table No.

DA-1, 2, and 3; Site 1, BASE EFFLUENT

DB-1, 2, and 3; Site 2, PLANT INFLUENT

DC-1, SITE 3, VEHICLE MAINTENANCE AND WASHRACK EFFLUENT

DD-1, SITE 4, HOSPITAL EFFLUENT

DE-1, SITE 5, DENTAL CLINIC EFFLUENT

DF-1, SITE 6, PMEL EFFLUENT

DG-1, SITE 7, PHASE MAINTENANCE HANGER 1200 EFFLUENT

DH-1, SITE 8, BUILDING 1118 EFFLUENT

DI-1, AND 2; SITE 9, BASE HOUSING EFFLUENT

DJ-1, SITE 10, LIFT STATION 1600 EFFLUENT

DK-1 and 2; SITE 11, SOUTH BASE SAMPLING POINT

DL-1, POTABLE WATER

DM-1 SPIKE SAMPLE AND REAGENT BLANK

DM-2 QA/QC - EQUIPMENT BLANKS

#### Oils, Greases and Total Petroleum Hydrocarbons

Oil and Grease (O&G) is not a specific analysis because a group of substances with similar properties are measured due to their solubility in trichlorotrifluoroethane. Some of these compounds could include organic dyes, sulfur compounds, and chlorophyll. Total Petroleum Hydrocarbons (TPH) compounds are extracted and analyzed in the same manner as O&G; however, after measuring for O&G with a infrared detector, a silica gel is added to the sample to adsorb the nonpetroleum compounds and remeasured (Standard Methods 18th Edition). Total Petroleum Hydrocarbons compounds detected can originate from detergents and other domestic sources, and not solely from fuels.

Tables DA-1 through DK-1 indicate few elevated levels of O&G. Table DF-1 indicates the most elevated O&G sample collected during the survey. This sample was measured at 584 mg/L. The associated TPH level, only 37.6 mg/L, indicated that the origin of the O&G found was not predominately petroleum. The average oil and grease concentration into the WWTF over seven days was 35 mg/L. As a general guideline, the average concentration at any point source should be 50 mg/L or less. If higher levels are consistently observed and the process can not be changed, then an oil and grease trap may be required to minimize grease ball accumulation at lift stations and the WWTF.

#### Chemical Oxygen and Biochemical Oxygen Demand

Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) are two common analytical procedures to determine the oxygen demand of a water sample. This demand may be caused by biodegradable organics, nutrients, refractory organics, heavy metals or dissolved inorganic solids. The BOD<sub>5</sub> procedure requires five days to incubate the microbes which biochemically exert an oxygen demand. This procedure

must begin within 24 hours after the sample is collected. The results can also vary depending on the microbial colony and concentration of contaminants. The COD procedure, with a holding time of up to 28 days, utilizes a chemical oxidizer to determine the oxygen demand. This procedure is more consistent than the BOD procedure. The BOD samples were directly transported locally to the Palmer and Mallard and Associates, Inc. Laboratory, Sumter, South Carolina. The COD samples were analyzed at Armstrong Laboratories.

Metcalf and Eddy Wastewater Engineering Treatment Disposal and Reuse, 1991 outlines typical BOD levels in untreated domestic wastewater as; 110 mg/L - Weak, 220 - Medium, and 400 Strong, and COD levels as; 250 mg/L - Weak, 500 - Medium, and 1000 Strong.

Tables DA-1 through DK-1 indicate few elevated levels of BOD and COD. Water samples were only analyzed for BOD at the WWTF influent and effluent. Table DA-1 and 2 and DB-1 and 2 indicate the BOD levels for the effluent and influent-respectively. The influent BOD levels were less than 180 mg/L. This would be a weak to medium concentration. This could be contributed to the dilution from infiltration and cooling tower draining cooling water into the sanitary system. The effluent BOD levels indicated levels of 5 mg/L or less for the daily composite sample. These values indicate suitable reduction in BOD. The daily maximum is 30 mg/L and the monthly average is 15 mg/L.

Table DF-1 indicates the most elevated COD sample collected during the survey. This PMEL effluent sample was measured at 2520 mg/L. The COD levels detected on the previous day was 337 mg/L. This would seem more in line with samples collected throughout the base. The COD levels for the influent to the WWTF is approximately 200 mg/L for six days. The average effluent level was approximately 43 mg/L for the same six days. There seems to be possible switch in the effluent and influent sample collected on Tuesday, August 30th. This is also apparent for the voa analyzed for that day. This can be explained in that the samples bottles for Sites 1 and 2 were placed in the same box. Even though the bottles were labeled, they could have been mistakenly switched.

#### Total Cyanides

Total cyanides were analyzed at selected sites throughout the base. Almost all of the samples indicated detectable levels. These are low levels and the sources can most probably be attributed to the ingredients of the pesticides used at these facilities. There was only one excursion of cyanide in the base effluent at 0.038 mg/L. At the time of this report there was no limit established for cyanide in wastewater. The Maximum Contaminant Level (MCL) for drinking water is 0.2 mg/L, (Water Quality and Treatment, AWWA, 1990).

### Miscellaneous Analyses

Phenolic compounds are used in many products from cough syrup to cleaning compounds. The most elevated levels (330 mg/L) were detected at Site 7 on Friday. This is the Dental clinic, and it would be expected to have more cleaners and disinfectants in the sanitary. These values are within normal ranges of some domestic wastewaters and not excessively elevated.

The remaining analyses from Groups A, D, E, and field readings do not indicate any significant elevated compound concentration discharges from these facilities.

### Group G Parameters

Total acidity, alkalinity, bicarbonate alkalinity, and solids analyses for potable water are compiled in Table DL-1. The acidity, alkalinity and surfactant levels detected throughout the survey do not appear unusual. Total solids are listed in Tables DA-1 through DL-1.

The total solids levels found throughout the base were around the weak concentration levels. This could be attributed to groundwater infiltration and cooling tower water.

### Metals Analyses

Total metal analyses were performed on the wastewater samples by Induction Coupled Plasma (ICP) and Graphite Furnace methods. The base effluent and influent at Sites 1 and 2 respectively indicated no abnormally elevated levels of metals. There was an isolated trace of mercury detected in the influent on 25 Aug at 0.0006 mg/L. This should not be an issue at that concentration. The only two sites that had mercury detected was at the Dental Clinic and the 1600 lift station. Mercury blood pressure units were used extensively in hospitals and dental clinics for decades. They were often knocked over or broken with the mercury ending up on the floor. Dental chairs come equipped with vacuum aspirators and it was often convenient to extract the liquid metal from the floor, thus discharging it into the sanitary sewer. Mercury will sit in any low spot in the plumbing such a cracks, joints, and kinks. As the water flows past, it will carry away dissolved fractions of the metal. So a spill that resulted 20 years ago can still discharge detectable levels in the sanitary today. This also applied to meteorologists, avionics and PMEL that used or calibrated manometers.

### Volatile Organic Compounds (GC)

Volatile Organic Compounds (VOCs) were analyzed via EPA Methods 601 (Volatile Organic Hydrocarbons), 602 (Volatile Organic Aromatics).



VOCs are widely used in many products and are also by-products of ongoing processes throughout any USAF base. Usually, the small amounts that enter the sanitary system are treated by biodegradation or volatilization. Small amounts are routinely treated with no impact to the biological treatment system. Large amounts, however, can cause a toxic shock to the system in the POTW and create a fire or explosion hazard.

The VOCs present in the base effluent are not significant. The bromodichloromethane and chloroform are disinfection byproducts. The toluene and paradichlorobenzene detected Tuesday Aug 30th are most likely swapped with the influent as previously stated in the COD section. The toluene source should be traced and mitigated. The paradichlorobenzene is usually generated by bathroom deodorizers. The highest toluene level was detected at 18.3 mg/L (See TABLE DG-1) Site 7 at Hanger 1200. In fact most of the VOCs detected were at this location and lift station #1600.

Other compounds present at various sites are bromomethane, chlorodibromomethane, chloroform, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, ethylbenzene, methylene chloride, and xylene. Bromodichloromethane and chloroform are byproducts from chlorination. The other compounds can be traced to fuels, paints, cleaners and solvents. Most of the sites had relatively low levels of these compounds with the exception of Site 6.

Sites 7, and 10 effluents contained: chlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2 Dichloroethane, toluene, and xylene. The source of these compounds may be traced to the other upstream sampling points that also have the same constituents. These are lift stations that handle the majority of aircraft maintenance. Cleaners, additives, fuels, and other common chemicals use these compounds. Proper disposal practices should be used at these facilities to mitigate these organic compounds from entering the sanitary.

Chloroform was detected in the potable water sample and is a disinfection byproduct. Therefore, it will not be considered as a release from any particular operation, because it appears to be at the ambient level in the potable water source.

Para-Dichlorobenzene or 1,4 Dichlorobenzene is predominantly used as a insecticidal fumigant and a deodorant for garbage and restrooms. It has minor uses in resins and abrasive wheel production. This compound is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1978 and 1978, (40 CFR 116.4 (7/1/87)). This compound, a toxic pollutant pursuant to section 307(a)(1) of the Clean Water Act, is subject to effluent limitations (40 CFR 401.15 (7/1/90)). It was not detected at any base effluent; however, it was detected in minor amounts throughout the base. It should be noted that the EPA is promulgating National Primary Drinking Water Regulations (NPDWRs) for certain volatile synthetic organic chemicals. Specifically, this notice promulgates a maximum contaminant level for para-dichlorobenzene at 75.0

ppb. Drinking water standards should not be used for sanitary effluent standards. It would appear, however, that if the maximum detected level of para-dichlorobenzene from the sanitary sewer is less than the NPDWRs standard, then there should be minimal concern in removing deodorizers from the base supply.

Toluene is used in: Solvents for paints, lacquers, gums, and resins; as a gasoline and aviation fuel additive; inks; cements; cosmetics; spot removers; antifreezes; and fuel blending. Toluene, designated a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act, is further regulated by the Clean Water Act Amendments of 1977 and 1978, (40 CFR 116.4 (7/1/88)). This compound, a toxic pollutant pursuant to section 307(a)(1) of the Clean Water Act, is subject to effluent limitations (40 CFR 401.15 (7/1/91)). It was detected in the Base's effluent at Sites 4, 5, and 6 most days that it was sampled at concentrations of 1.58 to 518.4 ppb. It was also detected in some of the water sample collected from Sites 3, and 7. These levels can be reduced by better spill response and oil/water separator maintenance. These are not flammable levels however, prudent measures should be taken to mitigate further toluene releases into the sanitary.

Xylene is used in: Solvents; manufacturing Dyes; production of benzoic acid, manufacture of paints, lacquers, general solvent, and adhesives; as a gasoline and aviation fuel additive; and protective coatings. Xylene, designated a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act, is further regulated by the Clean Water Act Amendments of 1977 and 1978, (40 CFR 116.4 (7/1/88)). It was detected in the Base's effluent at Sites 4, 5, and 6 most days that it was sampled at concentrations of 1.1 to 409.1 ppb. It was also detected in two of the water sample collected from Site 7, (See TABLE DG-1).

#### Total Toxic Organic Compounds

Total Toxic Organic (TTO) compounds are detected with EPA Methods 608, 624 and 625. These are purgeable, base-, neutral-, and acid-extractable organic compounds. Total Toxic Organics analyses are very expensive and were therefore limited to the effluent discharge from the base at Site 1. Samples were analyzed for pesticides outside of the base entomology shop and the commingled housing site. No pesticides were detected coming out of the housing area. Chlordane was detected each sampling day at Site 11 with the highest level at 170 mg/L.

Table DA-3, list the Polychlorinated Biphenyls (PCBs), pesticides, volatile, base-neutral, and acid extractable compounds for the base influent Sites 1. Endosulfan I was detected at the base effluent at 0.01 mg/L. No PCBs were detected. Bis(2-ethylhexyl)phthalate, Diethylphthalate and phenol was detected at the effluent. The other organic compounds found in the TTO analyses are described as follows:

Bis(2-Ethylhexyl)Phthalate is used in: a plasticizers for polymeric materials such as natural rubber, synthetic rubber, cellulose acetate butyrate, polystyrene; vacuum pump

oil; dielectric fluids for capacitors; inert ingredients for pesticides; insect repellent formulations; cosmetics; rubbing alcohol; and photographic film, wire and cable adhesives, and cubitainers and lab plasticware. It is also one of the most common lab contaminants and can be found in most waters that are conveyed through polyvinylchloride (PVC) plumbing. This compound has a human criteria for ingestion of water at 15.0 mg/L. Contaminated aquatic organisms criteria is set at 50 mg/L. This compound, designated a toxic pollutant pursuant to section 307(a)(1) of the CWA, is subject to effluent limitations. It was detected at Site 1 at 90 mg/L respectively.

Diethyl Phthalate is used in: celluloid; solvents for cellulose acetate in manufacturing varnishes and dopes; denatured alcohol; wetting agents; insecticidal sprays; camphor substitutes; mosquito repellents; dye carriers; and plasticizers. This is also a common laboratory contaminant and is often found in water that is conveyed through PVC plumbing. This compound, designated a toxic pollutant pursuant to section 307(a)(1) of the Clean Water Act, is subject to effluent limitations (40 CFR 401.15 (7/1/87)). It was detected at Site 1 at 10 mg/L.

Phenol is used in: antiseptics; disinfectants; peptizing agents in glues; germicidal paints and slimicides; disinfectant against vegetative gram-negative and gram-positive bacteria; and extractive solvents for petroleum refining. The estimated permissible concentration of phenol in water as applied for human health effects ranges from 260 to 675 mg/L pursuant to Volume 1. EPA-600/7-77-136a. Research Triangle Park, NC: EPA, Nov. 1977.,p. E-182. This compound, a toxic pollutant pursuant to section 307(a)(1) of the Clean Water Act, is subject to effluent limitations (40 CFR 401.15 (7/1/87)). The acid extractable compound was detected at Site 1, at 12 mg/L.

#### QA/QC DATA

Table DL-1, lists the analytical results for the potable water collected from the North Security Police post. The analyses performed on the potable water reveal what chemical concentrations and impurities are found in the incoming treated water. These levels can be subtracted from the concentrations revealed by the analyses performed on the sanitary outfalls to determine the additive effects of effluents on the system. Oil and Grease is found throughout the entire survey at approximately 1.8 to 1720 mg/L. If a sample indicated a level of 4.0 mg/L, then the ambient or average level of 0.75 mg/L would be subtracted from the 4.0 mg/L for an reading of 3.25 mg/L. The potable water contains detectable concentrations of calcium, iron, zinc, oil and grease, kjeldahl nitrogen, and solids or residues. All of these levels are below the drinking water MCLs.

Tables DM-1 indicate spike samples that were created at Armstrong Laboratory. These samples were preserved and shipped to AL/OEA for analyses. These results are supposed to fall within an acceptable window or advisory range. Most of the results fell within this window. Few other analytes fell close to this window or were not analyzed for that particular parameter. Variances can be the results of matrix interferences, poor

recovery, or technician error. The laboratory re-analyzes if sample falls outside prescribed limits. These results indicate fairly good recovery.

Reagent blanks, collected and analyzed to determine if there are other interferences due to the reagent composition, are prepared by filling typical sample bottles with laboratory grade water and preserving them with the standard reagent used in the field. These blank samples are analyzed for the same parameters as those requested for the field samples. If there are significant values detected, then that value may be subtracted from the gross levels detected in the field sample for a net gain. The reagent blank results listed in Table DL-1, indicate that three parameters were detected. The sulfuric acid used to preserve Groups A and E analytes indicated a low, near detection level of chemical oxygen demand of 19.0 mg/L. The nitric acid used in the preservation of metals indicated a detectable level of 0.04 mg/L of iron and 0.06 mg/L of magnesium. These levels are not significant with respect to the levels detected in the sanitary waste water samples collected. Therefore the levels detected throughout the survey may be accepted as valid. The potable water analytes detected should still be considered when reviewing the samples collected throughout the base.

## SUMMARY AND RECOMMENDATIONS

Overall, the analyses collected at the base's effluent at Site-1 appeared normal for the operations conducted at this location with exception of the potentially swapped samples with the influent on Tuesday. None of the permit parameters were exceeded during this period. Contribution of industrial type pollutants to the base's sanitary wastewater discharge were detected at lift station #1600 and #1216. Minor levels of organic and inorganic compounds were found. These levels are not toxic to the operation of the treatment plant however, care should be used when handling chemicals and effort should be made to mitigate these chemicals from entering the sanitary.

Site 5 had elevated levels of mercury. This is most likely generated from past releases. The source could be traced back to the building to determine if it is the lines or inside equipment in the clinic itself. If it is in the lines, then is possible to replace the sanitary lines and remove the source(s). If it is coming from inside of the building, then each operatory should be inspected. Vacuumed mercury often will collect in the small knurls of the vacuum hoses inside of the operatories and other traps. If these are the sources, then these systems will have to be cleaned and the mercury properly disposed.

## CONCLUSIONS

The final effluent appears to be in compliance for the permitted parameters. The influent to the plant does not have excessive levels of any particular parameters. The toluene levels are minimal however, these sources should be attenuated with an effort to eliminate

them in accordance with the 12 Jan 1993 HQ AFMOA/SGP letter of 1992 Baseline Inventory of Industrial Toxics Program (ITP) Chemicals. Toluene is listed as one of the 17 chemicals that should be reduced by 50%.

The infiltration of groundwater and the continuous flow from the cooling towers are waters that do not have to be treated. These clean water sources can add up over 200K gallons per day. The treatment costs at a typical treatment plant is approximately \$2.75/1000 gallons. A savings of over \$200K could be made in treatment cost alone if these clean water sources were mitigated. One method is to discontinue purchasing air conditioning systems that utilize water to cool the bearings. Another is to discharge cooling tower water into stormwater basins versus sanitary system as these new systems are installed.

The oil/water separator system installed down gradient of the POL truck yard has been in disrepair for years as evident by the collected debris. This system is imperative to maintain in the event of a POL release on the flightline. Another pollution prevention measure is to berm the POL truck yard parking lot. This lot sloped toward the creek with no spill containment in the event of a fuel truck release. These issues were discussed with CE during the out briefing.

## REFERENCES

Investigation of Inappropriate Pollutant Entries into Storm Drainage System; EPA/600/R-92/238; United States Environmental Protection Agency; Jan 1993.

Laboratory Services Guide; AL/OE-TR-1994-0136; Occupational and Environmental Health Directorate, Brooks Air Force Base, Texas; 1994.

Wastewater Engineering Treatment, Disposal, and Reuse; Metcalf & Eddy, Inc.; McGraw-Hill, Inc.; 1991.

Water Quality and Treatment: Handbook of Community Water Supplies, American Water Works Association, 4th ed., 1990



**APPENDIX A**

**CORRESPONDENCE REQUESTING SURVEY**





DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS TACTICAL AIR COMMAND  
LANGLEY AIR FORCE BASE VA 23665-

11 Dec 91

YTO  
OF: SGPB

ECT: Tactical Air Command (TAC) Request for Waste Water and Hazardous Waste Surveys

TO: AL/OEB

1. During a recent TAC Water Quality Working Group meeting, the committee discussed the need and benefit of waste water and hazardous waste studies. Everyone agreed that these surveys are invaluable and that Armstrong Laboratories does an excellent job performing them. As a result, TAC would like to develop a program to have Armstrong Laboratory perform baseline waste water and hazardous waste studies at each TAC base over the next few years. In addition, we are interested in establishing a reoccurring schedule of studies to update the baseline surveys.
2. I have informally discussed this proposal with Maj John Garland and Capt Pat McMullen from your staff to determine the viability of the request. It appears TAC's request is similar to what you are already doing for ATC. Suggest we set-up a meeting to layout the details for this undertaking.
3. Meanwhile, I would like to request three waste water studies be accomplished in the near future. Cannon AFB, Mountain Home AFB, and Langley AFB all have MCP projects scheduled for FY 95 to upgrade their sewage treatment plants. Waste water studies are needed to provide input for their proper design.
4. Please advise me when you would be available to have the requested meeting to develop the TAC survey program. In addition, please indicate when you will be able to perform the three waste water surveys requested in this letter. As always, your assistance and support is greatly appreciated. Please contact me at HQ TAC/SGPB, DSN 574-4611.

7674

DAVID L. POTTS, Lt Col, USAF, BSC  
Command Bioenvironmental Engineer  
Office of the Command Surgeon

cc: TAC/DEVC  
1 Med Gp/SGPB  
27 Med Gp/SGPB  
366 Med Gp/SGPB

*Readiness is our Profession*



DEPARTMENT OF THE AIR FORCE  
ARMSTRONG LABORATORY (AFSC)  
BROOKS AIR FORCE BASE, TEXAS 78235-5000

18 MAR 1992

OEBE (Maj Garland, DSN 240-3305)

Air Combat Command Strawman Survey Schedule

HQ TAC/SGPB/DEVC

1. Attached is the strawman survey schedule for the next six years. For the first four years, we plan to survey all the bases that have never been surveyed. The anticipated month of the survey is next to each base. In 1998, we will be surveying those bases that have had wastewater characterizations in recent years to the present. Those surveys are in parentheses by the base. In 1999, we will start to resurvey the bases in sequence starting from those surveyed in 1993.

2. If you have any questions, please contact Maj Garland.

EDWARD F. MAHER, Colonel, USAF, BSC  
Chief, Bioenvironmental Engineering  
Division

1 Atch  
Survey

cc: HQ SAC/SGPB/DEVC

# Air Combat Command Strawman Survey Schedule

## 1993

Shaw AFB SC--April  
Griffiss AFB NY--May  
Minot AFB ND--June  
Ellsworth AFB SD--July

## 1995

Dyess AFB TX--March  
Pope AFB NC--April  
Seymour Johnson AFB NC--May  
Fairchild AFB WA--July

## 1997

Homestead AFB FL(87)--May  
Barksdale AFB LA(88)--June  
Beale AFB CA(89)--July  
Davis-Monthan AFB AZ(89)--August

## 1999

Mountain Home AFB ID(92)--July  
Cannon AFB NM(92)--September

## 1994

McConnell AFB KS--April  
Offut AFB NE--May  
Grand Forks AFB ND--June  
K.I. Sawyer AFB MI--July

## 1996

Tyndall AFB FL--March  
Nellis AFB NV--May  
F.E. Warren WY--July  
Moody AFB GA--September

## 1998

Luke AFB AZ(89)--April  
Holloman AFB NM(91)--June  
Whiteman AFB MS(91)--August  
Langley AFB VA(92)--September

14470

14470

14470

**APPENDIX B**  
**SAMPLING STRATEGY**

GROUP A	7 Day	7 Day	3 Day	3 Day	2 Day	2 Day	3 Day	3 Day	3 Day	1 Day	1 Day
Ammonia	7	7	3	3	2	2	3	3	3	1	3
Chemical Oxygen Demand	7	7	3	3	2	2	3	3	3	1	3
Kjeldahl Nitrogen	7	7									
Nitrate	7	7									
Nitrite	7	7									
Oil & Grease	7	7	3	3	2	2	3	3	3	1	3
Total Petroleum Hydrocarbon	7	7	3	3	2	2	3	3	3	1	3
Biochemical Oxygen Demand	5	5									
Orthophosphate	7	7									
Total Phosphorus	7	7	3	3	2	2	3	3	3	1	3
GROUP D											
Cyanide, Total	7	7		3	2	2	3	3	3	1	3
GROUP E											
Phenols	7	7	3	3	2	2	3	3	3	1	3
GROUP F, METALS											
Aluminum	7	7									
Arsenic	7	7	3	3	2	2	3	3	3	1	3
Barium	7	7									
Beryllium	7	7									
Boron	7	7									
Cadmium	7	7	3	3	2	2	3	3	3	1	3
Calcium	7	7									
Chromium (Total)	7	7	3	3	2	2	3	3	3	1	3
Copper	7	7	3	3	2	2	3	3	3	1	3
Iron	7	7	3	3	2	2	3	3	3	1	3
Lead	7	7	3	3	2	2	3	3	3	1	3
Magnesium	7	7									
Manganese	7	7									
Mercury	7	7	3	3	2	2	3	3	3	1	3
Nickel	7	7	3	3	2	2	3	3	3	1	3
Selenium	7	7									
Silver	7	7	3	3	2	2	3	3	3	1	3
Vanadium											
Thallium											
Zinc	7	7	3	3	2	2	3	3	3	1	3
GROUP G											
Acidity	7										
Alkalinity	7										
Bromide											
Residue, total	7	7									
Residue, Filterable	7	7	3	3	2	2	3	3	3	1	3
Residue, Nonfilterable	7	7									
Residue, Settleable	7	7									
Residue, Volatile	7	7									
Sulfate	7	7									
EPA METHODS											
601 Purgeable Halocarbon	7	7									
602 Purgeable Aromatics	7	7									
601/602			3	3	2	2	3	3	3	1	3
608 Pesticides and PCB's	4	4									
608 Modified PCB's only											
624/625 BNA's TIO's	2	2									
Total Site Analytes	284	270	48	57	38	38	51	57	76	26	95
											1197

Note that two O&G samples will be collected from the Chow Hall in addition to the above mentioned category

**APPENDIX C**  
**SAMPLING LOCATION MAP**

# SAMPLE SITE LOCATION MAP

SHAW AIR FORCE BASE

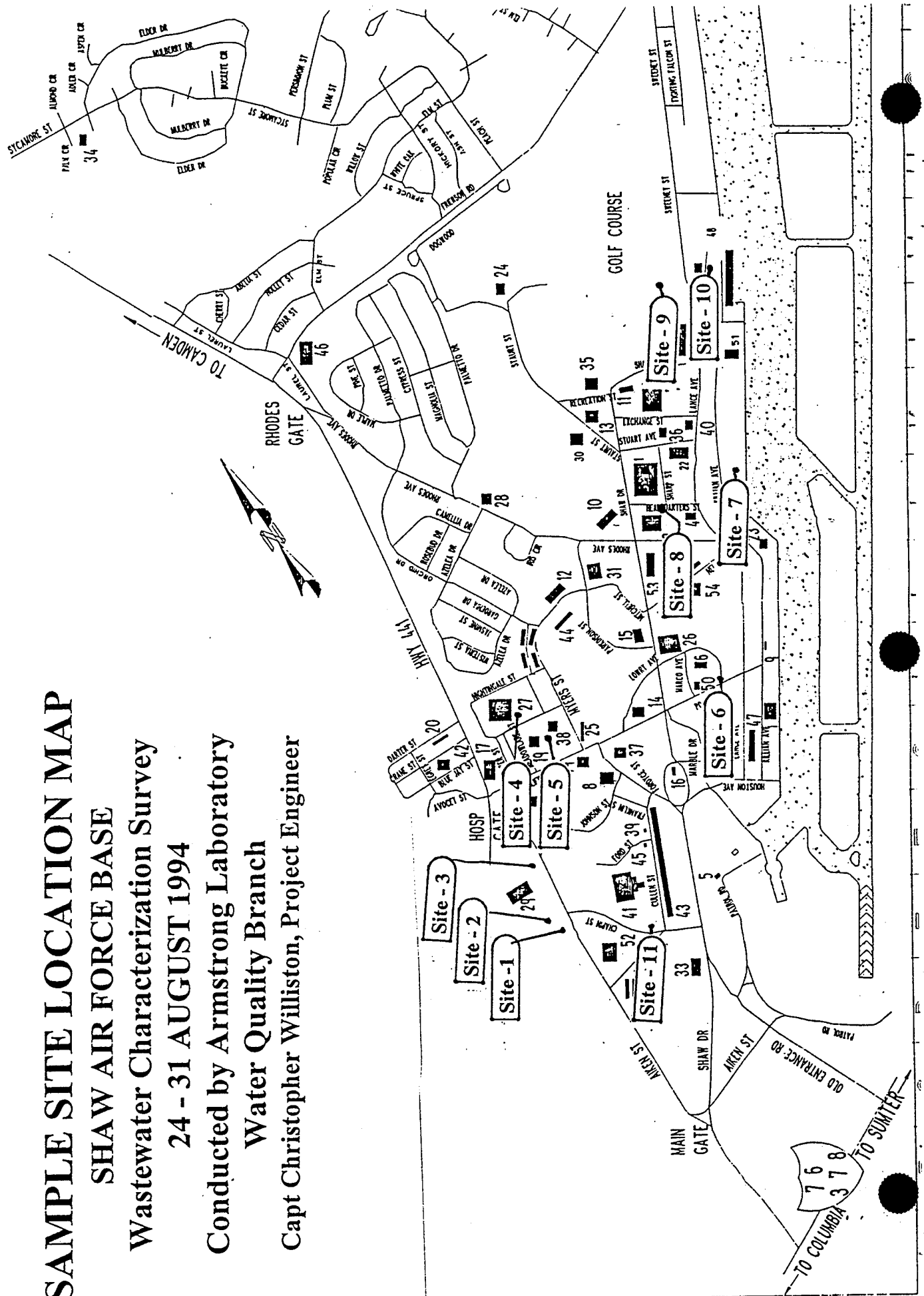
Wastewater Characterization Survey

24 - 31 AUGUST 1994

Conducted by Armstrong Laboratory

Water Quality Branch

Capt Christopher Williston, Project Engineer



**APPENDIX D**  
**ANALYTICAL RESULTS**



TABLE DA-1, SITE 1, BASE WWTF EFFLUENT				
Base Survey: SHAW AFB, SOUTH CAROLINA				
Survey Dates: 22 August - 2 September 1994				
Contributing Sources: Sanitary, Industrial, and Inflow				
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	THURS, 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994	SUN, 28 AUG 1994
Ammonia	<2	<2	<2	<2
Kjeldahl Nitrogen	1.4	1.3	1.6	1.6
Nitrate	14.8	15.6	17.2	16
Nitrite	<.02	<.02	<.02	<.02
Biochemical Oxygen Demand	5	5	5	5 & Duplicate is 5
Chemical Oxygen Demand	66	67	44	30
Oil and Grease	0.6	1.5	0.9	<.3
Total Petroleum Hydrocarbon	<1	1	<1	<1
Total Phosphorus	1.5	5.7	1.8	1.6
GROUP D ANALYTES (mg/L)				
Cyanide	<.005	<.005	<.005	<.005
GROUP E ANALYTES (ug/L)				
Phenols	<10	<10	<10	<10
GROUP F ANALYTES (mg/L)				
Aluminum	0.26		0.31	
Arsenic	<0.005	<0.005	<0.005	<0.005
Barium	<0.01	<0.01	0.01	<0.01
Beryllium	<0.0005	<0.0005	<0.0005	<0.0005
Boron	0.14	0.15	0.17	0.18
Cadmium	<0.001	<0.001	<0.001	<0.001
Calcium	24	23	25	25
Total Chromium	<0.005	<0.005	<0.005	<0.005
Copper	0.036	0.03	0.041	0.035
Iron	0.21	0.1	0.26	0.16
Lead	<0.02	<0.02	<0.02	<0.02
Magnesium	1.1	1.1	1.1	1.1
Manganese	0.029	0.012	0.039	0.022
Mercury	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	<0.005	<0.005	<0.005	<0.005
Potassium	6.4		6.7	
Selenium	<0.005	<0.005	<0.005	<0.005
Silver	<0.005	<0.005	<0.005	<0.005
Zinc	0.03	0.002	0.03	0.03
Group G (mg/L)				
Residue (Total)	293	341	356	367
Residue (Filterable)				
Residue (Nonfilterable)				
Residue (Settleable)				
Residue (Total Volatile)				
ON SITE ANALYSES				
pH (units)	6.2	6.4	6.2	6.2
Temperature (°C)	24	25	25	25
SAMPLE NUMBERS	CN940800 & GN94080	CN940830	CN940856	CN940874
	GN940824 & GN94080	GN940831	GN940857	GN940875
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	THURS, 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994	SAT, 28 AUG 1994
Benzene	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	1.60
Bromofom	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0
Chloroform	3.62	14.1	3.8	9.1
2-Chlorethyl Vinyl Ether	<1.0	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940831	GN940832	GN940858	GN940876

TABLE DA-2, SITE 1, BASE WWTF EFFLUENT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August - 2 September 1994			
Contributing Sources: Sanitary, Industrial, and Inflow			
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	MON, 29 AUG 1994	TUES, 30 AUG 1994	WED, 31 AUG 1994
Ammonia	<2	14.4	0.21
Kjeldahl Nitrogen	1.6	20.5	1.7
Nitrate	15.2	0.24	16.6
Nitrite	<.02	<.02	<.02
Chemical Oxygen Demand	21	216	33
Oil and Grease	0.9	4.2	0.6
Total Petroleum Hydrocarbon	<1	4.2	<1
Total Phosphorus	2.1	2.6	2.1
GROUP D ANALYTES (mg/L)			
Cyanide	<.005	<.005	0.035
GROUP E ANALYTES (ug/L)			
Phenols	<10	20	<10
GROUP F ANALYTES (mg/L)			
Aluminum	0.19	0.45	0.31
Arsenic	<0.005	<0.005	<0.005
Barium	<0.01	0.01	<0.01
Beryllium	<0.005	<0.0005	<0.0005
Boron	0.17	0.17	0.17
Cadmium	<0.001	<0.001	<0.001
Calcium	23	8.9	22
Total Chromium	<0.005	<0.005	<0.005
Copper	0.035	0.093	0.037
Iron	0.33	0.48	0.25
Lead	<0.02	<0.02	<0.02
Mercury	<0.0005	<0.005	<0.0005
Magnesium	1	0.94	0.99
Manganese	0.024	0.21	0.035
Nickel	<0.005	<0.005	<0.005
Potassium	5.6	6.4	5.8
Selenium	<0.005	<0.005	<0.005
Silver	<0.005	<0.005	<0.005
Zinc	0.03	0.06	0.03
Group G (mg/L)			
Residue (total)	298	213	332
ON SITE ANALYSES			
pH (units)	6.2	7	Not Recorded
Temperature (°C)	25	26	Not Recorded
SAMPLE NUMBERS	CN940889	CN940904	CN940922
	GN940890	GN940905	GN940923
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	MON, 29 AUG 1994	TUES, 30 AUG 1994	WED, 31 AUG 1994
Benzene	<1.0	<1.0	<1.0
Bromodichloromethane	1.21	<1.0	<1.0
Bromofom	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
2-Chloroethyl Vinyl Ether	<1.0	<1.0	<1.0
Chloroform	4.39	1.15	3.13
Chloromethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	3.63	<1.0
Dichlorodifluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0
Toluene	<1.0	2.65	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940891	GN940906	GN940924

TABLE DA-3, Site 1, BASE WWTF EFFLUENT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August to 2 September 1994			
Contributing Sources: Sanitary, Industrial, and Inflow			
Total Toxic Organics 624 & 625 (ug/L)	COLLECTION DATE	Total Toxic Organics 624 & 625 (ug/L)	COLLECTION DATE
<b>Volatile Compounds</b>	Wed, 31 Aug 94	<b>Base Neutral Compounds (ug/L)</b>	Wed, 31 AUG 1994
Benzene	<5.0	Acenaphthene	<5.0
Bromodichloromethane	<5.0	Acenaphthylene	<5.0
Bromoform	<5.0	Anthracene	<5.0
Bromomethane	<5.0	Benzidine	<30.0
Carbon tetrachloride	<5.0	Benzo(a)anthracene	<5.0
Chlorobenzene	<5.0	Benzo(b)fluoranthene	<5.0
Chloroethane	<5.0	Benzo(a)pyrene	<5.0
2-Chloroethylether	<5.0	Benzo(k)pyrene	<5.0
Chloroform	<5.0	Benzo(g,h,i)perylene	<5.0
Chloromethane	<5.0	Bis(2-chloroethyl)ether	<5.0
Dibromochloromethane	<5.0	Bis(2-chloroethoxy)methane	<5.0
1,2-Dichlorobenzene	<5.0	Bis(2-chloroisopropyl)ether	<5.0
1,3-Dichlorobenzene	<5.0	Bis(2-ethylhexyl)phthalate	90
1,4-Dichlorobenzene	<5.0	4-Bromophenyl-phenylether	<5.0
1,1-Dichloroethane	<5.0	Butylbenzylphthalate	<5.0
1,2-Dichloroethane	<5.0	Chlordane	Not Analyzed
1,1-Dichloroethene	<5.0	2-Chloronaphthalene	<5.0
cis-1,2-Dichloroethene	<5.0	4-Chlorophenyl-phenyl ether	<5.0
Trans-1,2-Dichloroethene	<5.0	Chrysene	<5.0
1,2-Dichloropropane	<5.0	Dibenzo(a,h)anthracene	<5.0
Cis-1,3-Dichloropropene	<5.0	Dibenzofuran	<5.0
Trans-1,3-Dichloropropene	<5.0	1,2-Dichlorobenzene	<5.0
Ethylbenzene	<5.0	1,3-Dichlorobenzene	<5.0
Freon 113	<5.0	1,4-Dichlorobenzene	<5.0
Methylene Chloride	<5.0	3,3'-Dichlorobenzidine	<40.0
1,1,2,2-Tetrachloroethane	<5.0	Diethylphthalate	10
Tetrachloroethene	<5.0	Dimethyl phthalate	<5.0
Toluene	<5.0	Di-n-butylphthalate	<5.0
1,1,1-Trichloroethane	<5.0	2,4-Dinitrotoluene	<5.0
1,1,2-Trichloroethane	<5.0	2,6-Dinitrotoluene	<5.0
Trichloroethene	<5.0	Di-n-octylphthalate	<5.0
Trichlorofluoromethane	<5.0	Fluoranthene	<5.0
Vinyl Chloride	<5.0	Fluorene	<5.0
o-Xylene	<5.0	Hexachlorobenzene	<5.0
m-Xylene	<5.0	Hexachlorobutadiene	<5.0
p-Xylene	<5.0	Hexachlorocyclopentadiene	<5.0
		Hexachloroethane	<5.0
	COLLECTION DATE	Indeno(1,2,3-cd)pyrene	<5.0
<b>PCB's &amp; PESTICIDES (ug/L)</b>	Wed, 31 Aug 94	Isophorone	<5.0
Alpha-BHC	<0.01	Naphthalene	<5.0
Beta-BHC	<0.01	Nitrobenzene	<5.0
Delta-BHC	<0.01	N-Nitroso dimethyl amine	<5.0
Lindane (gamma-BHC)	<0.01	N-Nitroso-di-n-propylamine	<5.0
Heptachlor	<0.01	N-Nitrosodiphenylamine	<5.0
Aldrin	<0.01	Phenanthrene	<5.0
Heptachlor Epoxide	<0.01	Pyrene	<5.0
Endosulfan I	0.01	1,2,4-Trichlorobenzene	<5.0
Dieldrin	<0.01		
4,4' DDE	<0.01	Acid Compounds (ug/L)	
Endrin	<0.01	P-Chloro-m-cresol	<5.0
Endosulfan II	<0.01	2-Chlorophenol	<5.0
4,4' DDD	<0.01	2,4-Dichlorophenol	<5.0
Endosulfan Sulfate	<0.01	2,4-Dimethylphenol	<5.0
4,4-DDT	<0.01	2,4-Dinitrophenol	<20.0
Endrin Ketone	Not Analyzed	4,6-Dinitro-2-methylphenol	<20.0
Methoxychlor	<0.05	2-Nitrophenol	<5.0
Chlordane	<0.05	4-Nitrophenol	<20.0
Alpha-Chlorodane	Not Reported	Pentachlorophenol	<20.0
Gamma-Chlorodane	Not Reported	Phenol	12
Toxaphene	<1	2,4,6-Trichlorophenol	<5.0
Endrin Aldehyde	<0.01		
Arochlor 1016	<0.5	Sample Number	GN940904
Arochlor 1221	<0.5		CN940922
Arochlor 1232	<0.5		
Arochlor 1242	<0.5		
Arochlor 1248	<0.5		
Arochlor 1254	<0.5		
Arochlor 1260	<0.5		
SAMPLE NUMBER	CN940922		
	CN940889		
	CN940915		
	CN940918		

TABLE DB-1, SITE 2, BASE WWTF INFLUENT				
Base Survey: SHAW AFB, SOUTH CAROLINA				
Survey Dates: 22 August - 2 September 1994				
Contributing Sources: Sanitary, Industrial, and Inflow				
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	THURS, 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994	WED, 28 AUG 1994
Ammonia	15.2	14	11.4	11.6
Kjeldahl Nitrogen	21	21.5	20.5	21.5
Nitrate	<1	<1	<1	<1
Nitrite	<.02	<.02	<.02	<.02
Biochemical Oxygen Demand	160	170	150	150 Duplicate is 120
Chemical Oxygen Demand	207	219	214	204
Oil and Grease	72	31.2	7.2	51
Total Petroleum Hydrocarbon	5.3	1	1.3	<1
Total Phosphorus	3.5	3	3.7	2.7
GROUP D ANALYTES (mg/L)				
Cyanide	<.005	<.005	0.012	<.005
GROUP E ANALYTES (ug/L)				
Phenols	24	15	13	10
GROUP F ANALYTES (mg/L)				
Aluminum	1.6	1.3	1.3	
Arsenic	<0.005	<0.005	<0.005	<0.005
Barium	0.03	0.02	0.02	0.01
Beryllium	<0.0005	<0.0005	<0.0005	<0.0005
Boron	0.15	0.19	0.17	0.19
Cadmium	<0.001	<0.001	<0.001	<0.001
Calcium	9.9	8.9	9.1	9.2
Total Chromium	<0.005	<0.005	<0.005	<0.005
Copper	0.16	0.11	0.15	0.088
Iron	1.6	0.33	0.81	0.31
Lead	<0.02	<0.02	<0.02	<0.02
Magnesium	1.2	1.1	1.1	1.1
Manganese	0.25	0.24	0.27	0.26
Mercury	0.0006	<0.0005	<0.0005	<0.0005
Nickel	<0.005	<0.005	<0.005	<0.005
Potassium	Not requested	7.2	7.5	6.3
Selenium	<0.005	<0.005	<0.005	<0.005
Silver	<0.005	<0.005	<0.005	<0.005
Zinc	0.08	0.06	0.07	0.05
Group G (mg/L)				
Residue (total)	241	220	285	1685
ON SITE ANALYSES				
pH (units)	6.2	6.4	6.4	6.4
Temperature (°C)	27	27	25	25
SAMPLE NUMBERS	CN940804 and GN940805	CN940833	CN940859	CN940877
	GN940806 and GN940825	GN940834	GN940860	GN940878
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
	THURS, 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994	WED, 28 AUG 1994
VOLATILE COMPOUNDS (ug/L)				
Benzene	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0
2-Chlorethylvinyl Ether	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	4.7	4.6	3	3.8
Dichlorodifluoromethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0	<1.0
Toluene	2.1	<1.0	<1.0	1.2
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940807	GN940835	GN940861	GN940879
	CN940825			CN940884

TABLE DB-2, SITE 2, BASE WWTF INFLUENT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August - 2 September 1994			
Contributing Sources: Sanitary, Commercial, and Inflow			
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	MON, 29 AUG 1994	TUES, 30 AUG 1994	WED, 31 AUG 1994
Ammonia	17.2	<2	12.8
Kjeldahl Nitrogen	27.5	2	18
Nitrate	<1	14.8	<1
Nitrite	<0.02	<0.02	<0.02
Biochemical Oxygen Demand	180	113	88
Chemical Oxygen Demand	225	23	138
Oil and Grease	30	0.6	53.6
Total Petroleum Hydrocarbon	1.8	<1	2
Total Phosphorus	3.6	1.8	2.8
GROUP D ANALYTES (mg/L)			
Cyanide	0.006	<0.005	<0.005
GROUP E ANALYTES (ug/L)			
Phenols	27	<10	18
GROUP F ANALYTES (mg/L)			
Aluminum	1.3	0.12	3
Arsenic	<0.005	<0.005	<0.005
Barium	0.03	<0.01	0.11
Beryllium	<0.0005	<0.0005	<0.0005
Boron	0.13	0.19	0.14
Cadmium	<0.001	<0.001	0.001
Calcium	9.3	22	12
Total Chromium	<0.005	<0.005	<0.005
Copper	0.18	0.031	0.19
Iron	0.85	0.1	2.5
Lead	<0.02	<0.02	<0.02
Mercury	<0.0005	<0.0005	<0.0005
Magnesium	1.1	1	1.2
Manganese	0.29	0.016	0.27
Nickel	<0.005	<0.005	<0.005
Potassium	6.3	5.6	6.8
Selenium	<0.005	<0.005	<0.005
Silver	<0.005	<0.005	<0.005
Zinc	0.08	0.03	0.15
Group G (mg/L)			
Residue (total)	302	323	442
ON SITE ANALYSES			
pH (units)	6.4	7.2	6
Temperature (°C)	25	24	24
SAMPLE NUMBERS	CN940892 GN940893	CN940907 GN940908	CN940925 GN940926
VOLATILE COMPOUNDS (ug/L)	COLLECTION DATE MON, 29 AUG 1994	COLLECTION DATE TUES, 30 AUG 1994	COLLECTION DATE WED, 31 AUG 1994
Benzene	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	1.84	<1.0
Bromoform	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
2-Chlorethylvinyl Ether	<1.0	<1.0	<1.0
Chloroform	1.09	5.53	<1.0
Chloromethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	3.35	<1.0	3.62
Dichlorodifluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0
Toluene	2.41	<1.0	2.48
1,1,1-Trichloroethane	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940894	GN940909	GN940927

TABLE DB-3, Site 2, BASE WWTF INFLUENT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August to 2 September 1994			
Contributing Sources: Sanitary, Industrial, and Inflow			
Total Toxic Organics 624 & 625 (ug/L)	COLLECTION DATE	Total Toxic Organics 624 & 625 (ug/L)	COLLECTION DATE
<b>Volatile Compounds</b>	Sunday, 31 Aug 94	<b>Base Neutral Compounds (ug/L)</b>	
Benzene	<5.0	Acenaphthene	<5.0
Bromodichloromethane	<5.0	Acenaphthylene	<5.0
Bromoform	<5.0	Anthracene	<5.0
Bromomethane	<5.0	Benzo(a)anthracene	<5.0
Carbon tetrachloride	<5.0	Benzo(b)fluoranthene	<5.0
Chlorobenzene	<5.0	Benzo(a)pyrene	<5.0
Chloroethane	<5.0	Benzo(k)fluoranthene	<5.0
2-Chloroethyvinylether	<5.0	Benzo(g,h,i)perylene	<5.0
Chloroform	<5.0	Bis(2-chloroethyl)ether	<5.0
Chloromethane	<5.0	Bis(2-chloroethoxy)methane	<5.0
Dibromochloromethane	<5.0	Bis(2-chloroisopropyl)ether	<5.0
1,2-Dichlorobenzene	<5.0	Bis(2-ethylhexyl)phthalate	<5.0
1,3-Dichlorobenzene	<5.0	4-Bromophenyl-phenyl ether	<5.0
1,4-Dichlorobenzene	<5.0	Butylbenzylphthalate	Not Reported
1,1-Dichloroethane	<5.0	Chlordane	Not Performed
1,2-Dichloroethane	<5.0	2-Chloronaphthalene	<5.0
1,1-Dichloroethene	<5.0	4-Chlorophenyl-phenyl ether	<5.0
cis-1,2-Dichloroethene	<5.0	Chrysene	<5.0
Freon 113	<5.0	Dibenz(a,h)anthracene	<5.0
Trans-1,2-Dichloroethene	<5.0	Di-n-butylphthalate	<5.0
1,2-Dichloropropane	<5.0	1,2-Dichlorobenzene	<5.0
Cis-1,3-Dichloropropene	<5.0	1,3-Dichlorobenzene	<5.0
Trans-1,3-Dichloropropene	<5.0	1,4-Dichlorobenzene	<5.0
Ethylbenzene	<5.0	3,3'-Dichlorobenzidine	<40.0
Methylene Chloride	<5.0	Diethylphthalate	70
1,1,2,2-Tetrachloroethane	<5.0	Dimethyl phthalate	<5.0
Tetrachloroethene	<5.0	2,4-Dinitrotoluene	<5.0
Toluene	<5.0	2,6-Dinitrotoluene	<5.0
1,1,1-Trichloroethane	<5.0	Di-n-octylphthalate	<5.0
1,1,2-Trichloroethane	<5.0	Fluoranthene	<5.0
Trichloroethylene	<5.0	Fluorene	<5.0
Trichlorofluoromethane	<5.0	Hexachlorobenzene	<5.0
Vinyl Chloride	<5.0	Hexachlorobutadiene	<5.0
o-Xylene	<5.0	Hexachlorocyclopentadiene	<5.0
m-Xylene	<5.0	Hexachloroethane	<5.0
p-Xylene	<5.0	Indeno(1,2,3-cd)pyrene	<5.0
	COLLECTION DATE	Isophorone	<5.0
<b>PCB's &amp; PESTICIDES (ug/L)</b>	Sunday, 31 Aug 94	Naphthalene	<5.0
Alpha-BHC	<0.01	Nitrobenzene	<5.0
Beta-BHC	<0.01	N-Nitroso dimethyl amine	<5.0
Delta-BHC	<0.01	N-Nitroso-di-n-propylamine	<5.0
Lindane (gamma-BHC)	<0.01	N-Nitrosodiphenylamine	<5.0
Heptachlor	<0.01	Phenanthrene	<5.0
Aldrin	<0.01	Pyrene	<5.0
Heptachlor Epoxide	<0.01	1,2,4-Trichlorobenzene	<5.0
Endosulfan I	0.01		
Dieldrin	<0.01	<b>Acid Compounds (ug/L)</b>	
4,4' DDE	<0.01	P-Chloro-m-cresol	<5.0
Endrin	<0.01	2-Chlorophenol	<5.0
Endosulfan II	<0.01	2,4-Dichlorophenol	<5.0
4,4' DDD	<0.01	2,4-Dimethylphenol	<5.0
Endosulfan Sulfate	<0.01	2,4-Dinitrophenol	<20.0
4,4-DDT	<0.01	4,6-Dinitro-2-methylphenol	<20.0
Endrin Ketone	Not Reported	2-Nitrophenol	<5.0
Methoxychlor	<0.05	4-Nitrophenol	<20.0
Chlordane	0.33	Pentachlorophenol	<20.0
Alpha-Chlorodane	Not Reported	Phenol	<5.0
Gamma-Chlorodane	Not Reported	2,4,6-Trichlorophenol	<5.0
Toxaphene	<1		
Endrin Aldehyde	<0.03		
Arochlor 1016	<0.5	Sample Number	GN940907
Arochlor 1221	<0.5		CN940925
Arochlor 1232	<0.5		
Arochlor 1242	<0.5		
Arochlor 1248	<0.5		
Arochlor 1254	<0.5		
Arochlor 1260	<0.5		
SAMPLE NUMBER	CN940892		

TABLE DC-1, SITE 3, VEHICLE MAINTENANCE & WASHRACK EFFLUENT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August - 2 September 1994			
Contributing Sources: Battery Shop, Vehicle Maintenance, & Washrack			
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	THURS, 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994
Ammonia	0.8	2.6	1.46
Kjeldahl Nitrogen	4.7		
Nitrate	0.52		
Nitrite	<.02		
Chemical Oxygen Demand	67	124	96
Oil and Grease	5.8	19.6	3.4
Total Petroleum Hydrocarbon	2	12.6	1.1
Total Phosphorus	1.1	0.64	4.7
GROUP D ANALYTES (mg/L)			
Cyanide	<.005	<.005	<.005
GROUP E ANALYTES (ug/L)			
Phenols	<10	15	<10
GROUP F ANALYTES (mg/L)			
Aluminum			1.3
Arsenic	<0.005	<0.005	<0.005
Barium			
Beryllium			
Boron			
Cadmium	0.012	0.021	0.047
Calcium			
Total Chromium	0.006	0.007	0.033
Copper	0.036	0.038	0.17
Iron	2.2	1.9	11
Lead	0.03	0.03	0.19
Magnesium			
Manganese			
Mercury	<0.0005	<0.0005	<0.0005
Nickel	<0.005	<0.005	0.013
Potassium			
Selenium			
Silver	<0.005	<0.005	<0.005
Zinc	0.13	0.14	0.46
Group G (mg/L)			
Residue (total)	134	206	477
ON SITE ANALYSES			
pH (units)			
Temperature (°C)			
SAMPLE NUMBERS	CN940808, GN940809 & GN950810	CN940836 GN940837	CN940862 GN940863
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	THURS, 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994
Benzene	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	103.8	33.2	1.2
Dichlorodifluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940811	GN940838	GN940864

TABLE DD-1, SITE 4, HOSPITAL			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August - 2 September 1994			
Contributing Sources: Hospital			
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	THURS, 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994
Ammonia	3.2	3.2	2.6
Kjeldahl Nitrogen	18		
Nitrate	0.48		
Nitrite	<0.02		
Chemical Oxygen Demand	86	76	75
Oil and Grease	3.8	1.8	1.3
Total Petroleum Hydrocarbon	1.3	1	<1
Total Phosphorus	1.8	0.82	1.5
GROUP D ANALYTES (mg/L)			
Cyanide	<0.005	<0.005	<0.005
GROUP E ANALYTES (ug/L)			
Phenols	24	20	27
GROUP F ANALYTES (mg/L)			
Aluminum			3
Arsenic	<0.005	<0.005	<0.005
Barium			
Beryllium			
Boron			
Cadmium	<0.001	<0.001	<0.001
Calcium			
Total Chromium	<0.005	<0.005	0.008
Copper	0.068	0.043	0.16
Iron	0.63	0.4	0.95
Lead	<0.02	<0.02	<0.02
Mercury	<0.0005	<0.0005	<0.0005
Magnesium			
Manganese			
Nickel	0.009	<0.005	0.05
Potassium			
Selenium			
Silver	0.007	0.005	0.007
Zinc	0.06	0.03	0.12
Group G (mg/L)			
Residue (total)	162	93	212
ON SITE ANALYSES			
pH (units)			
Temperature (°C)			
SAMPLE NUMBERS	CN940812	CN940839	CN940865
	GN940814	GN940840	GN940866
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	THURS, 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994
Benzene	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	4.20
Bromoform	<1.0	<1.0	11.8
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	6.9
Chloroethane	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether	<1.0	<1.0	<1.0
Chloroform	2.4	<1.0	2
Chloromethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	3.62
Dichlorodifluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940815	GN940841	GN940867



TABLE DE-1, SITE 5, DENTAL CLINIC				
Base Survey: SHAW AFB, SOUTH CAROLINA				
Survey Dates: 22 August - 2 September 1994				
Contributing Sources: Dental Clinic, Auto Hobby, Bldg. 1029, & Dorms				
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	
GROUP A ANALYTES (mg/L)	THURS. 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994	
Ammonia	12.4	11.6		4
Chemical Oxygen Demand	190	190		89
Oil and Grease	9.6	24.4		5.1
Total Petroleum Hydrocarbon	1	7.8		1.1
Total Phosphorus	3.5	2.2		1.75
GROUP D ANALYTES (mg/L)				
Cyanide	0.026	0.095		0.005
GROUP E ANALYTES (ug/L)				
Phenols	18	20		13
GROUP F ANALYTES (mg/L)				
Aluminum	Not Reported	Not Reported	Not Reported	
Arsenic	<0.005	<0.005	<0.005	
Barium	Not Reported	Not Reported	Not Reported	
Beryllium	Not Reported	Not Reported	Not Reported	
Boron	Not Reported	Not Reported	Not Reported	
Cadmium	<0.001	<0.001	<0.001	
Calcium	Not Reported	Not Reported	Not Reported	
Total Chromium	<0.005	<0.005	<0.005	
Copper	0.069	0.068		0.087
Iron	0.98	0.08		0.52
Lead	<0.02	<0.02	<0.02	
Magnesium	Not Reported	Not Reported	Not Reported	
Manganese	Not Reported	Not Reported	Not Reported	
Mercury	0.0042	0.0052	<0.0005	
Nickel	<0.005	<0.005	<0.005	
Potassium	Not Reported	Not Reported	Not Reported	
Selenium	Not Reported	Not Reported	Not Reported	
Silver	0.007	0.009	<0.005	
Zinc	0.11	0.08		0.04
Group G (mg/L)				
Residue (total)	262	168		85
ON SITE ANALYSES				
pH (units)				
Temperature (°C)				
SAMPLE NUMBERS	CN940816 and GN950817	CN940842	CN940859	
	GN940818	GN940843	GM940860	
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	
VOLATILE COMPOUNDS (ug/L)	THURS. 25 AUG 1994	FRI, 26 AUG 1994	SAT, 27 AUG 1994	
Benzene	<1.0	<1.0	<1.0	
Bromodichloromethane	<1.0	<1.0	<1.0	
Bromoform	<1.0	<1.0	<1.0	
Bromomethane	<1.0	<1.0	<1.0	
Carbon tetrachloride	<1.0	<1.0	<1.0	
Chlorobenzene	<1.0	<1.0	<1.0	
Chlorodibromomethane	<1.0	<1.0	<1.0	
Chloroethane	<1.0	<1.0	<1.0	
Chloroform	<1.0	<1.0	<1.0	
2-Chloroethylvinyl Ether	<1.0	<1.0	<1.0	
Chloroform	<1.0	<1.0	<1.0	
Chloromethane	<1.0	<1.0	<1.0	
Chlorodibromomethane	<1.0	<1.0	<1.0	
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	
1,4-Dichlorobenzene	<1.0	<1.0		1.2
Dichlorodifluoromethane	<1.0	<1.0	<1.0	
1,1-Dichloroethane	<1.0	<1.0	<1.0	
1,2-Dichloroethane	<1.0	<1.0	<1.0	
1,1-Dichloroethene	<1.0	<1.0	<1.0	
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	
1,2-Dichloropropane	<1.0	<1.0	<1.0	
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	
Ethyl Benzene	<1.0	<1.0	<1.0	
Methylene Chloride	<1.0	<1.0	<1.0	
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	
Tetrachloroethylene	<1.0	<1.0	<1.0	
Toluene	<1.0		1.6	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	
Trichloroethylene	<1.0	<1.0	<1.0	
Trichlorofluoromethane	<1.0	<1.0	<1.0	
Vinyl Chloride	<1.0	<1.0	<1.0	
o-Xylene	<1.0	<1.0	<1.0	
m-Xylene	<1.0	<1.0	<1.0	
p-Xylene	<1.0	<1.0	<1.0	
SAMPLE NUMBER	GN940819	GN940844	GN940870	

TABLE DF-1, SITE 6, PMEL EFFLUENT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August - 2 September 1994			
Contributing Sources: Precision Measuring Equipment Laboratory			
		COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)		SAT, 27 AUG 1994	TUE, 30 AUG 1994
Ammonia		15.2	40.9
Chemical Oxygen Demand		337	2520
Oil and Grease		584	Not Requested
Total Petroleum Hydrocarbon		37.6	Not Requested
Total Phosphorus		3.5	28.17
GROUP D ANALYTES (mg/L)			
Cyanide		0.012	0.015
GROUP E ANALYTES (ug/L)			
Phenols		186	185
GROUP F ANALYTES (mg/L)			
Arsenic		<0.005	<0.1
Cadmium		0.002	<0.05
Total Chromium		<0.005	<0.1
Copper		0.33	0.9
Iron		1.9	6.9
Lead		<0.02	<0.1
Mercury		<0.01	<0.01
Nickel		<0.005	<0.1
Silver		<0.005	<0.02
Zinc		0.1	1.4
Group G (mg/L)			
Residue (total)		444	220
ON SITE ANALYSES			
pH (units)		7	7
Temperature (°C)		27	26
SAMPLE NUMBERS		CN940910 GN940855	CN940940
		COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)		THURS, 25 AUG 1994	FRI, 26 AUG 1994
Benzene		<1.0	<1.0
Bromodichloromethane		<1.0	<1.0
Bromoform		<1.0	<1.0
Bromomethane		<1.0	<1.0
Carbon tetrachloride		<1.0	<1.0
Chlorobenzene		<1.0	<1.0
Chlorodibromomethane		<1.0	<1.0
Chloroethane		<1.0	<1.0
Chloroform		<1.0	<1.0
2-Chlorethylvinyl Ether		<1.0	<1.0
Chloroform		<1.0	<1.0
Chloromethane		<1.0	<1.0
Chlorodibromomethane		<1.0	<1.0
1,2-Dichlorobenzene		<1.0	<1.0
1,3-Dichlorobenzene		<1.0	<1.0
1,4-Dichlorobenzene		4.7	4.6
Dichlorodifluoromethane		<1.0	<1.0
1,1-Dichloroethane		<1.0	<1.0
1,2-Dichloroethane		<1.0	<1.0
1,1-Dichloroethene		<1.0	<1.0
Trans-1,2-Dichloroethene		<1.0	<1.0
1,2-Dichloropropane		<1.0	<1.0
Cis-1,3-Dichloropropene		<1.0	<1.0
Trans-1,3-Dichloropropene		<1.0	<1.0
Ethyl Benzene		<1.0	<1.0
Methylene Chloride		<1.0	<1.0
1,1,2,2-Tetrachloroethane		<1.0	<1.0
Tetrachloroethylene		<1.0	<1.0
Toluene		12.5	<1.0
1,1,1-Trichloroethane		<1.0	<1.0
1,1,2-Trichloroethane		<1.0	<1.0
Trichloroethylene		<1.0	<1.0
Trichlorofluoromethane		<1.0	<1.0
Vinyl Chloride		<1.0	<1.0
o-Xylene		<1.0	<1.0
m-Xylene		<1.0	<1.0
p-Xylene		<1.0	<1.0
SAMPLE NUMBER		GN940854	GN940911

TABLE DG-1, SITE 7, PHASE MAINTENANCE HANGAR 1200 EFFLUENT				
Base Survey: SHAW AFB, SOUTH CAROLINA				
Survey Dates: 22 August - 2 September 1994				
Contributing Sources: Aircraft Maintenance				
GROUP A ANALYTES (mg/L)	COLLECTION DATE WED, 24 AUG 1994	COLLECTION DATE FRI, 26 AUG 1994	COLLECTION DATE MON, 29 AUG 1994	COLLECTION DATE TUES, 30 AUG 1994
Ammonia	15.4	72	37.6	35.2
Chemical Oxygen Demand	560	451	291	294
Oil and Grease	41.6	48.8	22.4	172
Total Petroleum Hydrocarbon	5.9	3.9	1.6	5.1
Total Phosphorus	1.7	6.3	5.7	5.7
GROUP D ANALYTES (mg/L)				
Cyanide	0.012	0.006	0.012	0.006
GROUP E ANALYTES (ug/L)				
Phenols	34	330	88	77
GROUP F ANALYTES (mg/L)				
Arsenic	<0.005	<0.005	<0.005	<0.005
Cadmium	0.047	0.013	0.017	0.014
Total Chromium	0.021	0.011	0.014	0.009
Copper	0.22	0.36	0.32	0.41
Iron	1.3	1	1.5	1.3
Lead	0.03	<0.02	<0.02	<0.02
Mercury	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	0.008	0.008	0.013	0.012
Silver	<0.005	<0.005	0.006	<0.005
Zinc	<0.17	0.18	0.19	0.18
Group G (mg/L)				
Residue (total)	301	495	404	282
ON SITE ANALYSES				
pH (units)	7	7.2	6.4	6.4
Temperature (°C)	26	26	26	26
SAMPLE NUMBERS	CN940826 GN940827	CN940845 GN940846	CN940912 GN940913	CN940936 GN940937
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	WED, 24 AUG 1994	FRI, 26 AUG 1994	MON, 29 AUG 1994	TUES, 30 AUG 1994
Benzene	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	1.5	2.06	2.25
Chlorodibromomethane	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0
2-Chlorethylvinyl Ether	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	5.9	10.3	<1.0	<1.0
1,3-Dichlorobenzene	1.2	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	11.4	24.8	11.5	9.11
Dichlorodifluoromethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	132.5	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0	<1.0
Toluene	3.2	17.1	18.3	12.5
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0
o-Xylene	1.2	<1.0	<1.0	<1.0
m-Xylene	*See Comment	<1.0	<1.0	<1.0
p-Xylene	1.7	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940827	GN940846	GM940914	GN940938

\*p-xylene is the sum of m-and p-xylene coelute

TABLE DH-1, SITE 8, BUILDING 1118 EFFLUENT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August - 2 September 1994			
Contributing Sources: Base Photo, Reproduction/Graphics, & CBPO			
GROUP A ANALYTES (mg/L)	COLLECTION DATE WED, 24 AUG 1994	COLLECTION DATE THRU, 25 AUG 1994	COLLECTION DATE FRI 26 AUG 1994
Ammonia	37.6	14.4	35.6
Chemical Oxygen Demand	500	270	319
Oil and Grease	5.1	15.7	1.8
Total Petroleum Hydrocarbon	1	1.8	<1
Total Phosphorus	12	6.1	6
GROUP D ANALYTES (mg/L)			
Cyanide	0.022	0.87	0.36
GROUP E ANALYTES (ug/L)			
Phenols	90	77	31
GROUP F ANALYTES (mg/L)			
Arsenic	<0.005	<0.005	<0.005
Cadmium	<0.001	<0.001	<0.001
Total Chromium	0.01	<0.005	0.009
Copper	0.14	0.11	0.11
Iron		1.3	1.4
Lead	<0.02	<0.02	<0.02
Mercury	<0.0005	<0.0005	<0.0005
Nickel	0.005	<0.005	0.005
Silver	0.4	0.081	0.25
Zinc	0.16	0.14	0.26
Group G (mg/L)			
Residue (total)	666	312	844
ON SITE ANALYSES			
pH (units)	6	6.4	6.2
Temperature (°C)	23	24	24
SAMPLE NUMBERS			
	CN940820 and GN940821	CN940847	CN940871
	GN940822	GN940848	GN940872
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	WED, 24 AUG 1994	THRU, 25 AUG 1994	FRI 26 AUG 1994
Benzene	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0
Bromofom	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
2-Chlorethylvinyl Ether	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0
Dichlorodifluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940823	GN940849	GN940873

TABLE DI-1, SITE 9, BASE HOUSING EFFLUENT				
Base Survey: SHAW AFB, SOUTH CAROLINA				
Survey Dates: 22 August - 2 September 1994				
Contributing Sources: Base Housing and Golf Course Facilities				
	COLLECTION DATE	Duplicate Sample	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	SUN, 28 AUG 1994	SUN, 28 AUG 1994	MON, 29 AUG 1994	TUES, 30 AUG 1994
Ammonia	19.6	18	12.4	13.6
Chemical Oxygen Demand	369	250	145	200
Oil and Grease	152	3	24.4	18.2
Total Petroleum Hydrocarbon	3	2.5	1.5	1.6
Total Phosphorus	4.2	4	2.5	3.7
GROUP D ANALYTES (mg/L)				
Cyanide	<.005	0.005	<.005	<.005
GROUP E ANALYTES (ug/L)				
Phenols	20	17	24	18
GROUP F ANALYTES (mg/L)				
Arsenic	<0.005	<0.005	<0.005	<0.005
Cadmium	<0.001	<0.001	<0.001	<0.001
Total Chromium	<0.005	<0.005	<0.005	<0.005
Copper	0.16	0.19	0.12	0.092
Iron	1.1	1.1	0.8	0.74
Lead	<0.02	<0.02	<0.02	<0.02
Mercury	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	<0.005	<0.005	<0.005	<0.005
Silver	<0.005	<0.005	<0.005	<0.005
Zinc	0.11	0.11	0.08	0.04
Group G (mg/L)				
Residue (total)	592	653	263	351
ON SITE ANALYSES				
pH (units)	6.2	6.2	6.4	6.2
Temperature (°C)	25	25	25	25
SAMPLE NUMBERS	CN940880 GN940881	CN940885 GN940886	CN940895 GN940896	CN940915 GN950916
	COLLECTION DATE	Duplicate Sample	COLLECTION DATE	COLLECTION DATE*
VOLATILE COMPOUNDS (ug/L)	SUN, 28 AUG 1994	SUN, 28 AUG 1994	MON, 29 AUG 1994	TUES, 30 AUG 1994
Benzene	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	1.46	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	2.2	1.9	1.9	2.25
Dichlorodifluoromethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	1.9	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940882	GN940887	GN940897	GN940917

TABLE DI-2, SITE 9, BASE HOUSING EFFLUENT	
Base Survey: SHAW AFB, SOUTH CAROLINA	
Survey Dates: 22 August - 2 September 1994	
Contributing Sources: Base Housing and Golf Course Facilities	
	COLLECTION DATE
PCB's & PESTICIDES (ug/L)	TUES, 30 AUG 1994
Alpha-BHC	<0.01
Beta-BHC	<0.01
Delta-BHC	<0.01
Lindane (gamma-BHC)	<0.01
Heptachlor	<0.01
Aldrin	<0.01
Heptachlor Epoxide	<0.01
Endosulfan I	<0.01
Dieldrin	<0.01
4,4' DDE	<0.01
Endrin	<0.01
Endosulfan II	<0.01
4,4' DDD	<0.01
Endosulfan Sulfate	<0.01
4,4-DDT	<0.01
Endrin Ketone	Not Reported
Methoxychlor	<0.05
Chlordane	<0.05
Alpha-Chlorodane	Not Reported
Gamma-Chlorodane	Not Reported
Toxaphene	<1
Endrin Aldehyde	<0.01
Arochlor 1016	<0.5
Arochlor 1221	<0.5
Arochlor 1232	<0.5
Arochlor 1242	<0.5
Arochlor 1248	<0.5
Arochlor 1254	<0.5
Arochlor 1260	<0.5
SAMPLE NUMBER	CN940915

TABLE DJ-1, SITE 10, LIFT STATION 1600 EFFLUENT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August - 2 September 1994			
Contributing Sources: Various Aircraft Maintenance Shops			
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	WED, 24 AUG 1994	FRI, 26 AUG 1994	WED, 31 AUG 1994
Ammonia	31.6	40	21.2
Chemical Oxygen Demand	442	416	179
Oil and Grease	1.3	76.8	58.4
Total Petroleum Hydrocarbon	<1	5.4	4.4
Total Phosphorus	5.4	1.8	4.4
GROUP D ANALYTES (mg/L)			
Cyanide	0.008	0.006	0.005
GROUP E ANALYTES (ug/L)			
Phenols	83	53	24
GROUP F ANALYTES (mg/L)			
Arsenic	<0.005	Sample Not Received	<0.005
Cadmium	0.014	Sample Not Received	0.017
Total Chromium	0.014	Sample Not Received	0.02
Copper	0.42	Sample Not Received	0.28
Iron	1.2	Sample Not Received	2.9
Lead	<0.02	Sample Not Received	0.06
Mercury	<0.0005	Sample Not Received	0.0006
Nickel	0.012	Sample Not Received	0.006
Silver	0.005	Sample Not Received	0.014
Zinc	0.2	Sample Not Received	0.42
Group G (mg/L)			
Residue (total)	303	468	373
ON SITE ANALYSES			
pH (units)	6	6.8	6.4
Temperature (°C)	25	27	27
SAMPLE NUMBERS	GN940828	CN940850	CN940931
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	WED, 24 AUG 1994	FRI, 26 AUG 1994	WED, 31 AUG 1994
Benzene	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Chlorodibromomethane	1.3	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	1	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	31.3	13.6	8.68
Dichlorodifluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	49.6	50.9
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0
Toluene	18	4.5	3.66
1,1,1-Trichloroethane	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN940829	GN940851	GN940932

TABLE DK-1, SITE 11, SOUTH BASE SAMPLING POINT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August - 2 September 1994			
Contributing Sources: C.E., Entomology Shop, DRMO, & Vehicle Main			
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	SUN, 28 AUG 1994	MON, 29 AUG 1994	TUES, 30 AUG 1994
Ammonia	2	29.6	28
Chemical Oxygen Demand	30	428	228
Oil and Grease	6	8.2	7.4
Total Petroleum Hydrocarbon	1.8	1.8	<1
Total Phosphorus	0.49	9	7.1
GROUP D ANALYTES (mg/L)			
Cyanide	0.005	0.012	0.01
GROUP E ANALYTES (ug/L)			
Phenols	<10	62	18
GROUP F ANALYTES (mg/L)			
Arsenic	<0.005	<0.005	<0.005
Cadmium	<0.001	0.016	0.003
Total Chromium	<0.005	0.82	0.027
Copper	0.11	0.74	0.23
Iron	0.49	2.3	8.7
Lead	<0.02	0.36	0.14
Mercury	<0.0005	0.019	0.0061
Nickel	<0.005	0.019	0.009
Silver	<0.005	<0.005	<0.005
Zinc	0.06	0.96	0.44
Group G (mg/L)			
Residue (total)	65	1387	366
ON SITE ANALYSES			
pH (units)	6.4	6.2	6.4
Temperature (°C)	26	26	27
SAMPLE NUMBERS			
	CN940901	CN940918	CN940928
	GN940902	GN940919	GN940929
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	SUN, 28 AUG 1994	MON, 29 AUG 1994	TUES, 30 AUG 1994
Benzene	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
2-Chlorethylvinyl Ether	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	2.32	2.14	0.96
Dichlorodifluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Ethyl Benzene	3.53	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0
Toluene	1.89	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
o-Xylene	3.39	<1.0	<1.0
m-Xylene	*See Comments	<1.0	<1.0
p-Xylene	2.6	<1.0	<1.0
SAMPLE NUMBER	GN940903	GN940920	GN940930

\*p-xylene is the sum of m- and p-xylene coelute



TABLE DK-2, SITE 11, SOUTH BASE SAMPLING POINT EFFLUENT			
Base Survey: SHAW AFB, SOUTH CAROLINA			
Survey Dates: 22 August - 2 September 1994			
Contributing Sources: C.E., Entomology Shop, DRMO, & Vehicle Main			
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
PCB's & PESTICIDES (ug/L)	MON, 29 AUG 1994	TUES, 30 AUG 1994	WED, 31 AUG 1994
Alpha-BHC	<0.01	<0.1	<0.01
Beta-BHC	<0.01	<0.1	<0.01
Delta-BHC	<0.01	<0.1	<0.01
Lindane (gamma-BHC)	<0.01	<0.1	<0.01
Heptachlor	<0.01	<0.1	<0.01
Aldrin	<0.01	<0.1	<0.01
Heptachlor Epoxide	<0.01	<0.1	<0.01
Endosulfan I	<0.01	<0.1	<0.01
Dieldrin	<0.01	<0.1	<0.01
4,4' DDE	<0.01	<0.1	<0.01
Endrin	<0.01	<0.1	<0.01
Endosulfan II	<0.01	<0.1	<0.01
4,4' DDD	<0.01	<0.1	<0.01
Endosulfan Sulfate	<0.01	<0.1	<0.01
4,4-DDT	<0.01	<0.1	<0.01
Endrin Ketone	Not Reported	Not Reported	Not Reported
Methoxychlor	<0.05	<0.5	<0.05
Chlordane	170	55	48
Alpha-Chlorodane	Not Reported	Not Reported	Not Reported
Gamma-Chlorodane	Not Reported	Not Reported	Not Reported
Toxaphene	<10	<10	<10
Endrin Aldehyde	<0.01	<0.01	<0.01
Arochlor 1016	<0.5	<0.5	<0.5
Arochlor 1221	<0.5	<0.5	<0.5
Arochlor 1232	<0.5	<0.5	<0.5
Arochlor 1242	<0.5	<0.5	<0.5
Arochlor 1248	<0.5	<0.5	<0.5
Arochlor 1254	<0.5	<0.5	<0.5
Arochlor 1260	<0.5	<0.5	<0.5
SAMPLE NUMBER	CN940918	CN940928	CN940935

TABLE DL-1, POTABLE WATER SAMPLE		
Base Survey: SHAW AFB, SOUTH CAROLINA		
Survey Dates: 22 August - 2 September 1994		
	COLLECTION DATE	COLLECTION DATE
GROUP A ANALYTES (mg/L)	FRI, 26 AUG 1994	WED, 31 AUG 1994
Ammonia	<0.2	<0.2
Kjeldahl Nitrogen (total)		0.3
Nitrate		0.32
Nitrite	<0.02	<0.02
Chemical Oxygen Demand		16
Oil and Grease		0.4
Total Petroleum Hydrocarbon	<1	Not requested
Total Phosphorus		0.42
GROUP D ANALYTES (mg/L)		
Cyanide	<0.005	<0.005
GROUP E ANALYTES (ug/L)		
Phenols	<10	<10
GROUP F ANALYTES (mg/L)		
Arsenic	<0.005	<0.005
Cadmium	<0.001	<0.001
Calcium		9.3
Total Chromium	<0.005	<0.005
Copper		0.19
Hardness (as CaCO3)		25
Iron		0.05
Lead	<0.002	<0.002
Magnesium		0.32
Manganese	<0.005	<0.005
Mercury	<0.0005	<0.0005
Nickel	<0.005	<0.005
Potassium		0.8
Selenium	<0.005	<0.005
Silver	<0.005	<0.005
Zinc		0.03
Group G (mg/L)		
Acidity	Not Requested	
Alkalinity		24
Alkalinity, bicarbonate		24
Fluoride		0.68
Residue (total)		94
Residue, filterable		88
Residue, nonfilterable		6
Residue, settleable	<0.2	<0.2
Residue, total volatile		76
Sulfate	Not Requested	
Turbidity	<0.5	<0.5
ON SITE ANALYSES		
pH (units)		
Temperature (°C)		
SAMPLE NUMBERS	GP940852	GP940933
	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	FRI, 26 AUG 1994	MON, 29 AUG 1994
Benzene	<0.5	<0.5
Bromodichloromethane	<0.5	<0.5
Bromoform	<0.5	<0.5
Bromomethane	<0.5	<0.5
Carbon tetrachloride	<0.5	<0.5
Chlorobenzene	<0.5	<0.5
Chlorodibromomethane	0.57	0.57
Chloroethane	<0.5	<0.5
Chloroform	<0.5	0.78
2-Chlorethylvinyl Ether	<0.5	<0.5
Chloromethane	<0.5	<0.5
Chlorodibromomethane	<0.5	<0.5
1,2-Dichlorobenzene	<0.5	<0.5
1,3-Dichlorobenzene	<0.5	<0.5
1,4-Dichlorobenzene	<0.5	<0.5
Dichlorodifluoromethane	<0.5	<0.5
1,1-Dichloroethane	<0.5	<0.5
1,2-Dichloroethane	<0.5	<0.5
1,1-Dichloroethene	<0.5	<0.5
Trans-1,2-Dichloroethene	<0.5	<0.5
1,2-Dichloropropane	<0.5	<0.5
Cis-1,3-Dichloropropene	<0.5	<0.5
Trans-1,3-Dichloropropene	<0.5	<0.5
Ethyl Benzene	<0.5	<0.5
Methylene Chloride	<0.5	<0.5
Methyl Ethyl Ketone	<0.5	<0.5
1,1,2,2-Tetrachloroethane	<0.5	<0.5
Tetrachloroethylene	<0.5	<0.5
Toluene	<0.5	<0.5
1,1,1-Trichloroethane	<0.5	<0.5
1,1,2-Trichloroethane	<0.5	<0.5
Trichloroethylene	<0.5	<0.5
Trichlorofluoromethane	3.66	3.66
Vinyl Chloride	<0.5	<0.5
p-Xylene	<0.5	<0.5
m-Xylene	<0.5	<0.5
p-Xylene	<0.5	<0.5
SAMPLE NUMBER	GP940853	GP940934

**TABLE DM-1, SPIKE SAMPLES**  
**Base Survey: SHAW AIR FORCE BASE**  
**Survey Dates: 22 August - 2 September 1994**

	Equipment Blank	Spike Sample	Spike Sample Actual Value	Parameter Window	Reagent Blank
GROUP A ANALYTES	MON, 29 Aug 94	TUE, 30 Aug 94			Monday, 29 Aug 94
Ammonia	<0.2	7.6	7.22	6.1-8.4	<0.2
Kjeldahl Nitrogen (mg/L)	Not Requested	7.6	7.19	5.9-8.5	<0.1
Nitrate	Not Requested	8	8	6.47-9.52	<0.1
Chemical Oxygen Demand (mg/L)	44	12			19
Oil and Grease (mg/L)	3.7	Not Performed			0.4
Total Petroleum Hydrocarbon (mg/L)	0.6	Not Performed			<1.0
Total Phosphorus (mg/L)	<0.1	3.9	4.95	4.3-5.6	<0.10
GROUP D ANALYTES					
Cyanide	<0.005	0.49	0.449	.33-.57	<0.005
GROUP E ANALYTES					
Phenols (ug/L)	<10	0.355	0.378	0.29-0.47	<10.0
GROUP F ANALYTES					
Arsenic (mg/L)	<0.005	0.04	0.05	.0389-0.0603	<0.005
Barium	Not Requested	0.08	0.0998	0.0771-0.134	<0.01
Cadmium (mg/L)	<0.001	0.005	0.0049	0.0033-0.0069	<0.001
Total Chromium (mg/L)	<0.005	0.038	0.0498	0.0409-0.0585	<0.005
Copper (mg/L)	<0.005	0.045	0.0499	0.043-0.0562	<0.005
Lead (mg/L)	<0.020	0.04	0.05	0.0403-0.0605	<0.02
Mercury (mg/L)	<0.0005	0.001	0.00202	0.0015-0.0026	<0.0005
Silver (mg/L)	<0.005	0.008	0.01	0.0082-0.0117	<0.005
GROUP G ANALYTES					
Residue (total)		26	Sample lost by lab		11
Residue (filterable)		30	Sample lost by lab		22
Residue (settleable)	<0.2		Sample lost by lab		<0.2
Residue, (nonfilterable)	<1.0		Sample lost by lab		<1
Residue, total volatile		26	Sample lost by lab		8
SAMPLE NUMBERS	GN940898	GN940921			GN940900
	GN940899	GN940939			
Benzene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Bromodichloromethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Bromoform	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Bromomethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Carbon tetrachloride	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Chlorobenzene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Chlorodibromomethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Chloroethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Chloroform	3.62	Not Performed	Not Performed	Not Performed	Not Performed
2-Chlorethylvinyl Ether	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Chloromethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Chlorodibromomethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,2-Dichlorobenzene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,3-Dichlorobenzene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,4-Dichlorobenzene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Dichlorodifluoromethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,1-Dichloroethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,2-Dichloroethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,1-Dichloroethene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Trans-1,2-Dichloroethene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,2-Dichloropropane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Cis-1,3-Dichloropropene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Trans-1,3-Dichloropropene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Ethyl Benzene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Methylene Chloride	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,1,2,2-Tetrachloroethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Tetrachloroethylene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Toluene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,1,1-Trichloroethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
1,1,2-Trichloroethane	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Trichloroethylene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
Trichlorofluoromethane		4.77	Not Performed	Not Performed	Not Performed
Vinyl Chloride	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
o-Xylene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
m-Xylene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed
p-Xylene	<1.0	Not Performed	Not Performed	Not Performed	Not Performed